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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,458	09/28/2005	Kazuo Kubota	0425-1178PUS1	3849

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EXAMINER	
CORDRAY, DENNIS R	
ART UNIT	**PAPER NUMBER**
1791	

NOTIFICATION DATE	DELIVERY MODE
01/07/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/525,458	KUBOTA ET AL.	
	Examiner	Art Unit	
	Dennis Cordray	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/24/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-15 and 18-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-15 and 18-20* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/20/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's amendments have overcome the previous rejections. Therefore, the rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 also recites a polymer emulsion that is a synthetic cationic polymer (A') and polymer particles (B). Claim 9 depends from Claim 1, which recites a polymer emulsion comprising a natural cationic polymer (A) and polymer particles (B). The polymer emulsion of Claim 9, which is a synthetic cationic polymer (A') and polymer particles (B) is construed by the Examiner to exclude any other material, including a natural cationic polymer (A) and water or any other solvent. It is not clear how there can be an emulsion without a solvent. It is also not clear how the natural cationic polymer (A), positively recited in Claim 1, can be excluded in dependent Claim 9.

Claim Objections

Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

dependent form, or rewrite the claim(s) in independent form. Claim 9 recites "vinyl monomer-derived structural unit derived from a monomer selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, vinyl fatty esters, styrene and α-methyl styrene." Claim 9 depends from Claim 1, which restricts the above monomers to vinyl fatty esters, thus Claim 9 expands rather than further limits the parent claim.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 5-10, 13-15 and 18-20 are rejected under 35 U.S.C. 103(a) as unpatentable over Pfohl et al (4978427) in view of Auhorn et al (4908240) as evidenced by Pfalz et al (6800675) or Dw Wacker et al (4940741).

Pfohl et al discloses a method of making paper comprising adding a copolymer to the papermaking stock prior to sheet formation to add wet and dry strength to the paper (col 1, lines 28-50). In some embodiments, the copolymer comprises 90 mol-% vinyl acetate and/or vinyl propionate and 10 mol-% vinyl formamide wherein 30 to 100% of the formyl groups are eliminated from the vinyl formamide. The weight percent of vinyl acetate and/or vinyl propionate can be calculated to be within the claimed range for some embldiments. For example, a copolymer of 90 mol-% vinyl acetate and 10 mol-% vinyl formamide with 100% elimination of the formyl units comprises 94.7 wt-% vinyl acetate, which lies within the claimed range of vintl fatty ester content. The use of vinyl propionate monomers will broaden the overlap of the claimed range. The polymer solutions, suspensions or dispersions have a solids content from 1 to 60 wt-% (col 3,

lines 3-6). The copolymers are added to the paper stock in an amount from 0.1 to 5 wt-% based on the dry fibers col 1, lines 46-48).

Pfohl et al does not disclose the presence of a natural or synthetic cationic polymer. Pfohl et al does not disclose filtering the stock on a wire mesh to drain water and form a paper layer, but such process is well known in the conventional art, as admitted by Applicant on p 7 of the response received 10/24/2007, thus would have been obvious to one of ordinary skill.

The use of cationic starch as a protective colloid, stabilizer and emulsifier in the emulsion polymerization of ethylenically unsaturated monomers is well known in the art (see Pfalz et al, col 1, lines 5-27; col 4, lines 44-53 and 59-67; col 5, lines 1-3; col 9, lines 5-13) or De Wacker et al, col 2, lines 11-16; col 3, lines 45-50 and 61-67).

Auhorn et al discloses a cationic aqueous polymer dispersion comprising vinyl acetate, vinyl propionate and/or other ethylenically unsaturated monomers (col 4, lines 5-19 and 45-60). In one embodiment, the polymerization of the monomers is conducted in the presence of a cationic emulsifier, a low molecular weight polymer containing from 5 to 100% by weight of a nitrogen-containing monomer as copolymerized units (col 2, lines 56-58; col 3, lines 26-42; col 3, line 58 to col 4, line 8). Specific examples of nitrogen containing compounds disclosed include dimethylaminoethyl (meth)acrylate, diethylaminoethyl (meth)acrylate, dimethylaminopropyl (meth)acrylate, dibutylaminopropyl (meth)acrylate, dimethylaminoneopentyl acrylate, (meth)acrylamidodimethylpropylamine, methacrylamidodiethylpropylamine and their quaternary salts obtained using benzyl chloride, methyl chloride, ethyl chloride, and

others (col 3, lines 26-42). The nitrogen content of the emulsifier can be calculated. Using, for example, dimethylaminoethyl acrylate quaternized with methyl chloride (molecular weight of 158 for the monomer unit without the chloride), the nitrogen content of the polymer ranges from 0.44 to 8.8 wt-%, which significantly overlays the claimed range. Using benzyl chloride as the quaternizing agent, the nitrogen content ranges from 0.3 to 6 wt-%. For the other higher molecular weight monomers, the nitrogen content is even lower.

In a second embodiment, the polymerization dispersion comprises, by weight, 10-56 parts of the monomer mixture and 100 parts of a 1.5-25 wt-% aqueous solution of a cationic starch (col 4, lines 22-39). The proportion of starch to monomer mixture (or to polymer particles following the polymerization) significantly overlays the claimed composition. The degree of substitution of the cationic starch is from 0.01 to 0.1 mole of nitrogen per mole of glucose units (col 8, lines 18-20), or from 0.09-0.9 wt-% nitrogen.

Auhorn et al does not disclose the amount of cationic emulsifier relative to the particles; however, it would have been obvious to one of ordinary skill in the art to use a similar amount to that disclosed for the cationic starch to obtain the same emulsifying effect.

The polymer particles produced have a mean diameter from 75 to 110 nm (0.075 to 0.11 μm), which overlays the claimed particle size ranges (col 7, lines 10-12).

The art of Phohl et al, Auhorn et al and the instant invention is analogous as pertaining to the emulsion polymerization of ethylenically unsaturated monomers. One of ordinary skill in the art would have been motivated to turn to Auhorn et al to provide a

detailed recipe for such polymerizations. It would thus have been obvious to one of ordinary skill in the art to use a cationic natural starch or synthetic cationic polymer as a protective colloid, stabilizer and as an emulsifier in the polymerization process of Pfohl et al in view of Auhorn et al as a well known and functionally equivalent option for making the copolymers. Absent evidence showing unexpected properties, it would also have been obvious to use polymers having the claimed nitrogen content as a functionally equivalent option. For similar reasons, it would have been obvious to use the claimed ratios of cationic polymer to copolymer particles. The combination of Phohl et al and Auhorn et al represents combining a copolymer known in the art with a known method for making the copolymer to obtain a result predictable to one of ordinary skill in the art. The claimed particle sizes would have resulted or, at least, it would have been obvious to obtain the claimed particle sizes because of the similarity of the ingredients and process to those claimed.

Auhorn et al does not disclose the viscosity of the synthetic cationic polymer (low molecular weight cationic emulsifier). However, in some embodiments the disclosed low molecular weight cationic emulsifier has the structure as claimed, a synthetic cationic polymer with a nitrogen content of less than 1 wt-%, thus would have the claimed properties. Where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the

reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

The vinyl acetate copolymer would have the claimed glass transition temperature or, at least, obtaining the glass transition temperature would have been obvious for reasons given above. For similar reasons, the stiffness of the paper would be improved.

Claim 7 is product-by-process claim. The product of Pfohl et al in view of Auhorn et al appears to be the same as or similar to the claimed product, a paper or pulp sheet comprising a natural or synthetic cationic polymer and polymer particles, although produced by a different process. The burden therefore shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). "In the event any differences can be shown for the product of the product-by-process claim 7 as opposed to the product taught by Pfohl et al in view of Auhorn et al, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results: see also In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)"

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DRC

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